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Lucas et al.

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(54) **DIP-FORMED SYNTHETIC POLYISOPRENE LATEX ARTICLES WITH IMPROVED INTRAPARTICLE AND INTERPARTICLE CROSSLINKS**

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claimer.

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(2015.01); **A41D 19/0055** (2013.01); **A61F**
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See application file for complete search history.

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ABSTRACT

A synthetic polyisoprene latex emulsion has pre-vulcanization composition and post vulcanization composition. The pre-vulcanization composition comprises soluble sulfur with high S₈ ring structure that is catalytically broken by a zinc dithiocarbamate. Surfactants present in the pre-vulcanization composition wets synthetic polyisoprene particles and permeates small sized sulfur and accelerator molecules into the interior of these particles thereby pre-vulcanizing the particles. The degree of pre-vulcanization is verified by isopropanol index test. The latex emulsion has post-vulcanization composition with accelerators that crosslink inter-particle region during post vulcanization cure cycle. The dipped synthetic polyisoprene article is substantially uniformly cured both in the inter-particle and intra-particle regions and reliably exhibits high cross link density, uniform distribution of double bonds in TEM and zinc segregation at the boundaries or original particles by electron microprobe analysis. The films exhibit high tensile strength, tensile modulus, tear strength, burst pressure and burst volume.

20 Claims, 7 Drawing Sheets

